



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Eric A. Jacobsen

Title: TRANSMIT POWER CONTROL WITHIN A WIRELESS TRANSMITTER

Docket No.: 884.313US1

Serial No.: 09/652,773

Filed: August 31, 2000

Due Date: July 16, 2005 (Saturday)

Examiner: Stephen D'Agosta

Group Art Unit: 2683

**MS Appeal Brief - Patents**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

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SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.

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SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.

(GENERAL)



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

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Eric A. Jacobsen

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For: TRANSMIT POWER CONTROL WITHIN A WIRELESS TRANSMITTER

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Assignee: Intel Corporation

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**APPEAL BRIEF UNDER 37 CFR § 41.37**

Mail Stop Appeal Brief- Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

The Appeal Brief is presented in support of the Notice of Appeal to the Board of Patent Appeals and Interferences, filed on May 16, 2005, from the rejection of claims 1, 3-5, 8-18, 20-23, 25-29, and 31-33 of the above-identified application, as set forth in the Office Action mailed on February 15, 2005.

The Commissioner of Patents and Trademarks is hereby authorized to charge Deposit Account No. 19-0743 in the amount of 500.00 which represents the requisite fee set forth in 37 C.F.R. § 41.2(b)(2). The Appellants respectfully request consideration and reversal of the Examiner's rejections of pending claims.

**APPEAL BRIEF UNDER 37 C.F.R. § 41.37**



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**1. REAL PARTY IN INTEREST**

The real party in interest of the above-captioned patent application is the assignee, INTEL CORPORATION.

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**2. RELATED APPEALS AND INTERFERENCES**

There are no other appeals or interferences known to the appellant that will have a bearing on the Board's decision in the present appeal.

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**3. STATUS OF THE CLAIMS**

Claims 1-33 are pending in the application. Claims 1, 3-5, 8-18, 20-23, 25-29, and 31-33 are rejected, and claims 2, 6, 7, 19, 24 and 30 are objected to. Claims 1, 3-5, 8-18, 20-23, 25-29, and 31-33 are being appealed.

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**4. STATUS OF AMENDMENTS**

No Amendment has been filed by the appellant subsequent to the Office Action dated February 15, 2005.

**5. SUMMARY OF CLAIMED SUBJECT MATTER**

The following is a concise explanation of the subject matter defined in each of the independent claims involved in the appeal. Claim elements are identified at least once by reference character and by the page and line in the specification where the element may be found.

Claim 1 recites a system for use in wirelessly transmitting a communication signal to a remote transceiver. The system includes an array of transmit antenna elements (12, page 5, lines 9-13) arranged in a predetermined pattern, a direction determination unit (26, page 4, lines 18-20) to determine a direction of the remote transceiver, a transmit beamformer (14, page 4, lines 22-24) coupled to the array of antenna elements to generate a transmit beam in the direction of the remote transceiver, and a power control unit (20, page 6, lines 1-5) to determine an antenna gain related parameter associated with the transmit beam generated by the transmit beamformer and to adjust a transmit power level of the system based on the antenna gain related parameter.

Claim 16 recites a method for use in wirelessly transmitting a communication signal to a remote location. The method includes determining a direction of the remote location (page 4, lines 18-20), generating a transmit antenna beam in the direction of the remote location using phased array principles (page 5, lines 15-18), determining a parameter related to an antenna gain associated with the transmit antenna beam (page 6, lines 1-5), and using the antenna gain related parameter to adjust a power level of a transmit signal to be transmitted to the remote location via the transmit antenna beam (page 6, lines 1-5).

Claim 22 recites a communication system for use in communicating with a remote communication entity. The system includes an array of antenna elements (12, page 5, lines 9-13) arranged in a predetermined configuration, an adjustable beamformer (14, page 4, lines 22-24) coupled to said array of antenna elements to generate a transmit beam in a predetermined direction in response to a control signal, said adjustable beamformer being capable of generating a beam in any of a plurality of different directions, and a power control unit (20, page 6, lines 1-5) to adjust a power level of a

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transmit signal to be transmitted by said array of antenna elements based on at least one parameter associated with said transmit beam generated by said adjustable beamformer.

Claim 28 recites a communication system for use in communicating with a remote communication entity. The system includes an array of dipole antenna elements (12, page 5, lines 9-13) arranged in a predetermined configuration, an adjustable beamformer (14, page 4, lines 22-24) coupled to said array of dipole antenna elements to generate a transmit beam in a predetermined direction in response to a control signal, said adjustable beamformer being capable of generating a beam in any of a plurality of different directions, and a power control unit (20, page 6, lines 1-5) to adjust a power level of a transmit signal to be transmitted by said array of dipole antenna elements based on at least one parameter associated with said transmit beam generated by said adjustable beamformer.

This summary does not provide an exhaustive or exclusive view of the present subject matter, and Appellant refers to the appended claims and its legal equivalents for a complete statement of the invention.

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**6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

I. Claims 1, 3-5, 8-13, 15-16, 18, 20-23, 25-29, and 31-33 stand rejected under 35 USC § 103(a) as being unpatentable over Daniel et al. (U.S. 6,075,484, Daniel) in view of Yun (U.S. 6,463,295), Keskitalo et al. (U.S. 6,345,188, Keskitalo) and Charas (U.S. 6,381,462).

II. Claim 14 stands rejected under 35 USC § 103(a) as being unpatentable over Daniel, Yun, Keskitalo, Charas, and further in view of Liebendoerfer et al. (U.S. 5,943,020, Liebendoerfer).

III. Claim 17 stands rejected under 35 USC § 103(a) as being unpatentable over Daniel, Yun, Keskitalo, Charas, and further in view of Roddy et al. (U.S. 6,127,740, Roddy).

## **7. ARGUMENT**

### *The Applicable Law*

All of the pending claims were rejected under 35 U.S.C. §103:

“A patent may not be obtained...if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.”<sup>1</sup>

The MPEP states the following with regard to rejections under 35 USC § 103:

“To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.”<sup>2</sup>

The appellant respectfully submits that the rejections of claims 1-33 under §103 are improperly based on hindsight as the Office Action has not provided objective evidence of a suggestion or motivation to form the proposed systems from the applied references. References have been “interpreted” in the Office Action as containing claimed subject matter without supporting evidence. The Office Action is also missing evidence of a reasonable expectation of success for each combination of references.

A Federal Circuit opinion states that the suggestion or motivation to combine references and the reasonable expectation of success must both be found in the prior art.<sup>3</sup>

Multiple Federal Circuit decisions emphasize the need for the PTO to furnish evidence in support of claim rejections. For example, the Federal Circuit addressed citation of “basic knowledge and common sense” in rejections in *In re Zurko*:

“With respect to core factual findings in a determination of patentability, however, the Board [Board of Patent Appeals and Interferences] cannot simply reach conclusions based on its own understanding or experience – or on its assessment of what would be basic knowledge or common sense. Rather, the Board must point to some concrete evidence in the record in support of these findings.”<sup>4</sup>

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<sup>1</sup> 35 U.S.C. § 103(a).

<sup>2</sup> MPEP 2143.

<sup>3</sup> MPEP 2143 citing *In re Vaeck*, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991).

<sup>4</sup> *In re Zurko*, 59 USPQ2d 1693, 1697 (Fed. Cir. 2001).

The Federal Circuit has particularly emphasized the need for the PTO to furnish evidence in support of claim rejections under 35 USC § 103 in *In re Lee*:

“When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness....The factual inquiry whether to combine references must be thorough and searching....It must be based on objective evidence of record.”<sup>5</sup>

The Federal Circuit stated that the “need for specificity pervades this authority” requiring a teaching, motivation, or suggestion to select and combine references.<sup>6</sup> The Federal Circuit has expressed this need for specificity in several cases:

“[T]he best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references....the showing must be clear and particular.”<sup>7</sup>

“[E]ven when the level of skill in the art is high, the Board must identify specifically the principle, known to one of ordinary skill, that suggests the claimed combination.”<sup>8</sup>

“[P]articular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed.”<sup>9</sup>

That an invention is within the ordinary skill of the art alone does not make it obvious:

“A statement that modifications of the prior art to meet the claimed invention would have been “well within the ordinary skill of the art at the time the claimed invention was made” because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references.”<sup>10</sup>

The Board in *Ex parte Levengood* stated:

“an examiner cannot establish obviousness by locating references which describe various aspects of a patent applicant’s invention without also providing evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done.”<sup>11</sup>

<sup>5</sup> *In re Lee*, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002).

<sup>6</sup> *In re Lee*, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002).

<sup>7</sup> *In re Dembiczaik*, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999).

<sup>8</sup> *In re Rouffet*, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998).

<sup>9</sup> *In re Kotzab*, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000).

<sup>10</sup> MPEP 2143.01 citing *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993).

<sup>11</sup> *Ex parte Levengood*, 28 USPQ2d at 1302.

*Rejections*

I. Claims 1, 3-5, 8-13, 15-16, 18, 20-23, 25-29, and 31-33 stand rejected under 35 USC § 103(a) as being unpatentable over Daniel et al. (U.S. 6,075,484, Daniel) in view of Yun (U.S. 6,463,295), Keskitalo et al. (U.S. 6,345,188, Keskitalo) and Charas (U.S. 6,381,462).

The Office Action dated 15 February 2005 (the Office Action) addressed the claims in groups, and the groups of claims are argued separately below. In general, Daniel, Yun, Keskitalo, and Charas do not show all of the elements recited in the claims. In addition, the Office Action provided several motivations for combining Daniel, Yun, Keskitalo, and Charas, but did not provide evidence of motivation in the prior art as is required by *In re Vaeck* and *In re Lee*. The Office Action is also missing evidence of a reasonable expectation of success of this combination of Daniel, Yun, Keskitalo, and Charas as required by *In re Vaeck* and *In re Lee*.

The Office Action addressed the claims in the following groups:

**Claims 1, 16, 22, 28, and 31**

Claim 1 recites a system comprising, among other elements, an array of transmit antenna elements, a transmit beamformer, and “a power control unit to determine an antenna gain related parameter associated with a transmit beam generated by said transmit beamformer and to adjust a transmit power level of said system based on said antenna gain related parameter.” Claim 22 recites “a communication system for use in communicating with a remote communication entity, comprising an array of antenna elements arranged in a predetermined configuration, an adjustable beamformer coupled to said array of antenna elements to generate a transmit beam in a predetermined direction in response to a control signal, said adjustable beamformer being capable of generating a beam in any of a plurality of different directions, and a power control unit to adjust a power level of a transmit signal to be transmitted by said array of antenna elements based on at least one parameter associated with said transmit beam generated by

“said adjustable beamformer.” Claims 16 and 28 recite similar features, and claim 31 is dependent on claim 28.

Daniel relates to a direction of arrival aided beamforming system. The system of Daniel is used to position beams and nulls in an antenna beam pattern.<sup>12</sup> The Office Action states that Daniel is “silent on a power control unit (PCU) to determine antenna gain parameter and adjust transmit power based on antenna gain parameter.”<sup>13</sup>

Yun relates to a “method for ongoing power control for a communication station with a multiple antenna array” without determining the direction of a transmit beam.<sup>14</sup>

The Office Action did not show in Daniel or Yun a power control unit to adjust a transmit power level of a system based on an antenna gain related parameter as is recited in claim 1.

Keskitalo relates to a base station for phasing a transmission signal.<sup>15</sup> Keskitalo describes that weighting coefficients Wi are selected in a way that an antenna pattern is achieved with a shape oriented in desired directions.<sup>16</sup> The phasing “is only dependent on one parameter,..the angle of arrival.”<sup>17</sup> Keskitalo does not describe an antenna gain related parameter as recited in claim 1.

Charas relates to a “communications system with dynamically adaptable subscriber units.”<sup>18</sup> The Office Action cited a paragraph from the background of Charas that generally discusses increasing the gain factor by using directional antennas.<sup>19</sup> The Office Action “interprets” Charas to mean the following:

“Hence the examiner notes that one skilled would monitor the gain factor while steering the directional antennas (which reads on the claim) to find the position for optimal RF communications between mobile user and base.”<sup>20</sup>

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<sup>12</sup> Daniel, Abstract.

<sup>13</sup> Office Action, page 3.

<sup>14</sup> Yun, Title.

<sup>15</sup> Keskitalo, Title.

<sup>16</sup> Keskitalo, column 6, lines 53-60.

<sup>17</sup> Keskitalo, column 7, lines 33-35.

<sup>18</sup> Charas, Title.

<sup>19</sup> Charas, column 2, lines 37-49.

<sup>20</sup> Office Action, page 4.

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Charas has been “interpreted” in the Office Action as containing this subject matter without supporting evidence as required by *In re Zurko*. Therefore, even as combined, Daniel, Yun, Keskitalo, and Charas do not show all of the elements recited in claims 1 and 22.

The Office Action states that:

“It would have been obvious .... to modify Daniel, such that power control is supported for a multi-array antenna, to provide control of RF power output for optimal transmission of the RF signal and decrease interference with other transmitters.”<sup>21</sup>

With reference to Keskitalo, the Office Action states that:

“It would have been obvious ....to modify Daniel in view of Yun, such that wireless transmission for an antenna array with power control also uses antenna array gain parameters to steer the beam in a certain direction, to provide optimal RF communication based on steering the array, antenna gain and power control parameters.”<sup>22</sup>

The Office Action did not identify any prior art evidence as the source of these suggestions for modifying Daniel, as is required by *In re Vaeck* and *In re Lee*. The Office Action has also not identified a chain of specific evidence that would motivate one skilled in the art to link Daniel, Yun, Keskitalo, and Charas in a combination as is required by *In re Vaeck* and *In re Lee*. The Office Action is improperly using hindsight in combining Daniel, Yun, Keskitalo, and Charas contrary to *In re Dembicza*k.

### Claims 3, 18, and 33

Claim 3 recites that “said power control unit adjusts said transmit power level of said system to comply with mandated transmit power limits.” Claims 18 and 33 recite similar features.

The Office Action states that:

“Yun teaches power control (figure 7a, #703 and #711 which inherently requires power control hardware) for a communication station with a multiple antenna array (abstract, figures 8a, 9, and C1, L24-50). The examiner interprets the power control hardware as having set limits (ie. minimum and maximum) which reads on the claim.”<sup>23</sup>

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<sup>21</sup> Office Action, page 4.

<sup>22</sup> Office Action, page 4.

<sup>23</sup> Office Action, page 5.

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Elements not explicitly shown in Yun cannot be “interpreted” as such, absent further evidence in the prior art itself, under *In re Zurko*. The Office Action also states that:

“It would have been obvious .... to modify Daniel in view of Yun and Keskitalo and Charas, such that transmit power complies with mandated transmit power levels, to ensure the system stays within regulated/licensed operating limits.”<sup>24</sup>

The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel, as is required by *In re Lee*. In fact, government mandated power limits are discussed in the appellant’s specification, page 2, lines 15-25. The Office Action is improperly using hindsight in combining Daniel, Yun, Keskitalo, and Charas contrary to *In re Dembicza*.

#### **Claim 4**

Claim 4 recites “the system claimed in claim 1, wherein said array of transmit antenna elements, said direction determination unit, and said transmit beamformer are each part of an adaptive antenna arrangement.” The Office action cited figure 3 as showing this feature,<sup>25</sup> but did not indicate which of the applied references contains this feature. The appellant respectfully submits that the Office Action has not identified text or figures in any one of the applied references that shows the subject matter recited in claim 4.

#### **Claims 5 and 20**

Claim 5 recites the “system claimed in claim 1, further comprising an array of receive antenna elements that are arranged in a predetermined pattern for use in receiving a communication signal from the remote transceiver, wherein said direction determination unit includes means for analyzing signal portions received by individual antenna elements within said array of receive elements to determine the direction of the remote transceiver.” Claim 20 recites the “method claimed in claim 16, wherein

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<sup>24</sup> Office Action, page 5.

<sup>25</sup> Office Action, page 5.

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determining a direction of said remote location includes receiving an RF signal from said remote location and analyzing said RF signal to determine the direction of said remote location.”

The Office action cited figure 3 as showing these features,<sup>26</sup> but did not indicate which of the applied references contains these features. The appellant respectfully submits that the Office Action has not identified text or figures in any one of the applied references that shows the subject matter recited in claims 5 and 20.

### **Claim 8**

Claim 8 recites the “system claimed in claim 1 wherein said transmit beam generated by said transmit beamformer is approximately centered in the direction of the remote transceiver determined by said direction determination unit.” The Office action cited C2, L28-35 and C6, L41-46 as showing this feature,<sup>27</sup> but did not indicate which of the applied references contains this feature. The appellant respectfully submits that the Office Action has not identified text or figures in any one of the applied references that shows the subject matter recited in claim 8.

### **Claim 9**

Claim 9 recites “the system claimed in claim 1, further comprising an input/output interface to couple said system to a data processing device.” The Office action cited C7, L8-16, L25-32, and L33-42 of Daniel with respect to claim 9,<sup>28</sup> but the feature recited in claim 9 is not found in these sections of Daniel. The Office Action states that:

“Hence the examiner interprets any processor as having a data port which an engineer can connect to in order to gather/view data. One skilled in the art would also couple it to a data processing device.”<sup>29</sup>

Elements not explicitly shown in Daniel cannot be “interpreted” as such, absent further evidence in the prior art itself, under *In re Zurko*. The Office Action states that:

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<sup>26</sup> Office Action, page 5.

<sup>27</sup> Office Action, page 5.

<sup>28</sup> Office Action, page 6.

<sup>29</sup> Office Action, page 6.

“It would have been obvious .... to modify Daniel in view of Yun and Keskitalo and Charas, such that the system can interface to a data processing device, to provide data to a technician (or user) for viewing on a computer screen or printout.”<sup>30</sup>

The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel, as is required by *In re Lee*.

### Claims 10, 11, and 12

Claims 10, 11, and 12 are dependent on claim 9 and recite individually “a serial data port,” “a universal serial bus (USB) port,” and “plug-and-play capability.” The Office action cited C7, L33-42 of Daniel, and states that:

“Hence the examiner interprets any processor as having a data port (i.e. serial, parallel, USB, LAN, wireless, etc.) which an engineer can connect to in order to gather/view data. One skilled in the art would also expect that said port had plug-and-play capability as is typically available on many/most computer systems today.”<sup>31</sup>

Elements not explicitly shown in Daniel cannot be “interpreted” as such, absent further evidence in the prior art itself, under *In re Zurko*. The Office Action states that:

“It would have been obvious .... to modify Daniel in view of Yun and Keskitalo and Charas, such that the system comprises a serial port, USB port or plug-n-play capability, to ensure that it utilizes industry-standard hardware and software which allows it to interoperate with a plethora of other commercially available devices.”<sup>32</sup>

The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel, as is required by *In re Lee*.

### Claim 13

Claim 13 is dependent on claim 1, and recites that “said array of transmit antenna elements, said direction determination unit, said transmit beamformer, and said power control unit are each mounted on a common support structure.” The Office Action states that:

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<sup>30</sup> Office Action, page 6.

<sup>31</sup> Office Action, page 6.

<sup>32</sup> Office Action, page 6.

“Yun teaches power control (figure 7a, #703 and #711 which inherently requires power control hardware) for a communication station with a multiple antenna array (abstract, figures 8a, 9, and C1, L24-50). The examiner interprets the power control hardware as having set limits (ie. minimum and maximum) which reads on the claim.”<sup>33</sup>

Elements not explicitly shown in Yun cannot be “interpreted” as such, absent further evidence in the prior art itself, under *In re Zurko*. The Office Action also states that:

“It would have been obvious .... to modify Daniel in view of Yun and Keskitalo and Charas, such that it contains a PCU, to provide means for the system to control it’s transmit power for optimal RF transmission as the environment dictates.”<sup>34</sup>

The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel, as is required by *In re Lee*.

### Claim 15

Claim 15 is dependent on claim 1 and recites “at least one variable gain amplifier to amplify a transmit signal before it is delivered to said array of transmit antenna elements during a transmit operation, wherein said power control unit controls the gain of said at least one variable gain amplifier to adjust the transmit power level of said system.”

The Office Action states that:

“It would have been obvious .... to modify Daniel in view of Yun and Keskitalo and Charas, such that the system uses a variable gain amplifier, to ensure the RF signal can be variably controlled as dictated by the user’s environment.”<sup>35</sup>

The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel, as is required by *In re Lee*.

### Claim 21

Claim 21 is dependent on claim 16 and recites “determining a direction, generating a transmit antenna beam, determining a parameter related to an antenna gain,

<sup>33</sup> Office Action, page 7.

<sup>34</sup> Office Action, page 7.

<sup>35</sup> Office Action, page 7.

and using said antenna gain related parameter are performed from a single indoor location.” The Office action cited figure 1 as showing this feature,<sup>36</sup> but did not indicate which of the applied references contains this feature. The appellant respectfully submits that the Office Action has not identified text or figures in any one of the applied references that shows the subject matter recited in claim 21.

### **Claim 23**

Claim 23 is dependent on claim 22 and recites that “said at least one parameter associated with said transmit beam includes an antenna gain related parameter.” The Office Action states that:

“[i]t would have been obvious .... to modify Daniel in view of Yun and Keskitalo and Charas, such that an antenna gain related parameter is associated with the transmit beam, to ensure that antenna gain can be a parameter that is modified as needed for optimal RF transmission.”<sup>37</sup>

The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel, as is required by *In re Lee*.

### **Claim 25**

Claim 25 recites the “communication system claimed in claim 22, wherein said adjustable beamformer generates the transmit beam in the predetermined direction using conventional phased array techniques.” The Office action cited figure 3 as showing this feature,<sup>38</sup> but did not indicate which of the applied references contains this feature. The appellant respectfully submits that the Office Action has not identified text or figures in any one of the applied references that shows the subject matter recited in claim 25.

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<sup>36</sup> Office Action, page 7.

<sup>37</sup> Office Action, page 8.

<sup>38</sup> Office Action, page 8.

## Claims 26 and 32

Claims 26 and 32 recite that “said adjustable beamformer is part of an adaptive antenna arrangement.” The Office action cited figure 3 as showing this feature,<sup>39</sup> but did not indicate which of the applied references contains this feature. The appellant respectfully submits that the Office Action has not identified text or figures in any one of the applied references that shows the subject matter recited in claims 26 and 32.

## Claim 27

Claim 27 recites that “said power control unit adjusts the power level of the transmit signal so that a maximum allowed power level is not exceeded.”

The Office Action states that:

“Yun teaches power control (figure 7a, #703 and #711 which inherently requires power control hardware) for a communication station with a multiple antenna array (abstract, figures 8a, 9, and C1, L24-50). The examiner interprets the power control hardware as having set limits (ie. minimum and maximum) which reads on the claim.”<sup>40</sup>

Elements not explicitly shown in Yun cannot be “interpreted” as such, absent further evidence in the prior art itself, under *In re Zurko*. The Office Action also states that:

“It would have been obvious .... to modify Daniel, such that the PCU controls power level to not exceed maximum allowed, to ensure the system stays within regulated/licensed operating limits.”<sup>41</sup>

The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel, as is required by *In re Lee*. In fact, government mandated power limits are discussed in the appellant’s specification, page 2, lines 15-25. The Office Action is improperly using hindsight in combining Daniel, Yun, Keskitalo, and Charas contrary to *In re Dembiczak*.

<sup>39</sup> Office Action, page 8.

<sup>40</sup> Office Action, page 8.

<sup>41</sup> Office Action, page 8.

## Claim 29

Claim 29 recites the “communication system claimed in claim 28, wherein said at least one parameter associated with said transmit beam includes an antenna gain related parameter.” The Office Action states that:

“It would have been obvious .... to modify Daniel in view of Yun and Keskitalo and Charas, such that the PCU calculates an antenna gain parameter based upon the delay setting, to provide optimal RF transmission to a transceiver based upon its location/direction in view of the antenna beamformer.”<sup>42</sup>

The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel, as is required by *In re Lee*.

## Conclusion

The appellant respectfully submits that the rejection of claims 1, 3-5, 8-13, 15-16, 18, 20-23, 25-29, and 31-33 under §103 is improperly based on hindsight contrary to *In re Dembicza*k. The Office Action has not identified a chain of specific evidence that would motivate one skilled in the art to link Daniel, Yun, Keskitalo, and Charas in a combination as is required by *In re Vaeck* and *In re Lee*. The Office Action cannot establish obviousness without “evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done.” *Ex parte Levengood*. References have been “interpreted” in the Office Action as containing claimed subject matter without supporting evidence as required by *In re Zurko*.

The Office Action is also missing evidence of a reasonable expectation of success of this combination of Daniel, Yun, Keskitalo, and Charas as required by *In re Vaeck* and *In re Lee*. The Office Action has not established a *prima facie* case of obviousness without showing evidence of a reasonable expectation of success.

The appellant respectfully submits that a *prima facie* case of obviousness of claims 1, 3-5, 8-13, 15-16, 18, 20-23, 25-29, and 31-33 has not been established in the Office Action. Reversal of the rejection of claims 1, 3-5, 8-13, 15-16, 18, 20-23, 25-29, and 31-33 under 35 U.S.C. §103 is respectfully requested.

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<sup>42</sup> Office Action, page 9.

II. Claim 14 stands rejected under 35 USC § 103(a) as being unpatentable over Daniel, Yun, Keskitalo, Charas, and further in view of Liebendoerfer et al. (U.S. 5,943,020, Liebendoerfer).

Claim 14 recites the “system claimed in claim 13, wherein said common support structure is adapted for desktop placement.” Liebendoerfer relates to a “flat three-dimensional antenna.”<sup>43</sup> The Office Action states that:

“It would have been obvious .... to modify Daniel in view of Yun and Keskitalo and Charas, such that the common structure is adapted for desktop placement, to provide a small antenna system for use by mobile users.”<sup>44</sup>

The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel, as is required by *In re Vaeck* and *In re Lee*. The appellant respectfully submits that the rejection of claim 14 under §103 is improperly based on hindsight contrary to *In re Dembicza*k. The Office Action has not identified a chain of specific evidence that would motivate one skilled in the art to link Daniel, Yun, Keskitalo, Charas, and Liebendoerfer in a combination as is required by *In re Vaeck* and *In re Lee*. The Office Action cannot establish obviousness without “evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done.” *Ex parte Levengood*.

The Office Action is also missing evidence of a reasonable expectation of success of this combination of Daniel, Yun, Keskitalo, Charas, and Liebendoerfer as required by *In re Vaeck* and *In re Lee*. The Office Action has not established a *prima facie* case of obviousness without showing evidence of a reasonable expectation of success.

The appellant respectfully submits that a *prima facie* case of obviousness of claim 14 has not been established in the Office Action. Reversal of the rejection of claim 14 under 35 U.S.C. §103 is respectfully requested.

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<sup>43</sup> Liebendoerfer, Title.

<sup>44</sup> Office Action, page 9.

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III. Claim 17 stands rejected under 35 USC § 103(a) as being unpatentable over Daniel, Yun, Keskitalo, Charas, and further in view of Roddy et al. (U.S. 6,127,740, Roddy).

Claim 17 recites the “method claimed in claim 16, further comprising determining an average transmit duty cycle associated with transmissions to said remote location, and using said average transmit duty cycle to adjust the power level of said transmit signal.” Roddy relates to a “system for controlling power in a remote signalling device”<sup>45</sup> Roddy describes a controller that determines an average duty cycle of a desired transmitted signal.<sup>46</sup> The Office Action states that:

“It would have been obvious .... to modify Daniel in view of Yun and Keskitalo and Charas, such that a duty cycle unit is used to determine average transmit duty cycle, to provide means for the PCU to adjust transmit power level as needed for optimal wireless transmission/reception.”<sup>47</sup>

The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel as is required by *In re Vaeck* and *In re Lee*. The appellant respectfully submits that the rejection of claim 17 under §103 is improperly based on hindsight contrary to *In re Dembicza*k. The Office Action has not identified a chain of specific evidence that would motivate one skilled in the art to link Daniel, Yun, Keskitalo, Charas, and Roddy in a combination as is required by *In re Vaeck* and *In re Lee*. The Office Action cannot establish obviousness without “evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done.” *Ex parte Levengood*.

The Office Action is also missing evidence of a reasonable expectation of success of this combination of Daniel, Yun, Keskitalo, Charas, and Roddy as required by *In re Vaeck* and *In re Lee*. The Office Action has not established a *prima facie* case of obviousness without showing evidence of a reasonable expectation of success.

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<sup>45</sup> Roddy, Abstract.

<sup>46</sup> Roddy, column 4, lines 47-49.

<sup>47</sup> Office Action, page 10.

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The appellant respectfully submits that a *prima facie* case of obviousness of claim 17 has not been established in the Office Action. Reversal of the rejection of claim 17 under 35 U.S.C. §103 is respectfully requested.

## 8. SUMMARY

For the foregoing reasons, the appellant respectfully submits that the rejections of claims 1, 3-5, 8-18, 20-23, 25-29, and 31-33 under 35 U.S.C. §103 were erroneous. Reversal of those rejections is respectfully requested, as well as the allowance of all the rejected claims.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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By his Representatives,

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Date 18 JULY 2005 By \_\_\_\_\_

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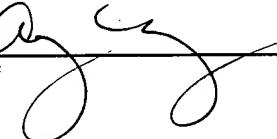


CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop Appeal Brief, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 18th day of July, 2005.

Name

Amy Moriarty

Signature



## CLAIMS APPENDIX

1. (Original) A system for use in wirelessly transmitting a communication signal to a remote transceiver, said system comprising:
  - an array of transmit antenna elements arranged in a predetermined pattern;
  - a direction determination unit to determine a direction of the remote transceiver;
  - a transmit beamformer coupled to said array of antenna elements to generate a transmit beam in the direction of the remote transceiver; and
  - a power control unit to determine an antenna gain related parameter associated with said transmit beam generated by said transmit beamformer and to adjust a transmit power level of said system based on said antenna gain related parameter.
2. (Original) The system claimed in claim 1, further comprising:
  - a duty cycle unit, coupled to said power control unit, to determine an average transmit duty cycle of said system over a predetermined time period and to deliver said average transmit duty cycle information to said power control unit, wherein said power control unit uses said average transmit duty cycle information to adjust the transmit power level of said system.
3. (Original) The system claimed in claim 1, wherein:
  - said power control unit adjusts said transmit power level of said system to comply with mandated transmit power limits.
4. (Original) The system claimed in claim 1, wherein:
  - said array of transmit antenna elements, said direction determination unit, and said transmit beamformer are each part of an adaptive antenna arrangement.

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5. (Original) The system claimed in claim 1, further comprising:  
an array of receive antenna elements that are arranged in a predetermined pattern for use in receiving a communication signal from the remote transceiver, wherein said direction determination unit includes means for analyzing signal portions received by individual antenna elements within said array of receive elements to determine the direction of the remote transceiver.

6. (Original) The system claimed in claim 1, wherein:  
said transmit beamformer includes a variable delay unit for each of said antenna elements within said array of transmit antenna elements and a controller to determine a delay setting for each variable delay unit based upon the direction of the remote transceiver determined by said direction determination unit.

7. (Original) The system claimed in claim 6, wherein:  
said power control unit includes a controller to calculate said antenna gain related parameter based upon delay settings of said transmit beamformer.

8. (Original) The system claimed in claim 1, wherein:  
said transmit beam generated by said transmit beamformer is approximately centered in the direction of the remote transceiver determined by said direction determination unit.

9. (Original) The system claimed in claim 1, further comprising:  
an input/output interface to couple said system to a data processing device.

10. (Original) The system claimed in claim 9, wherein:  
said input/output interface includes a serial data port.

11. (Original) The system claimed in claim 9, wherein:  
said input/output interface includes a universal serial bus (USB) port.

12. (Original) The system claimed in claim 9, wherein:  
said input/output interface includes plug-and-play capability.
13. (Original) The system claimed in claim 1, wherein:  
said array of transmit antenna elements, said direction determination unit, said transmit beamformer, and said power control unit are each mounted on a common support structure.
14. (Original) The system claimed in claim 13, wherein:  
said common support structure is adapted for desktop placement.
15. (Original) The system claimed in claim 1, comprising:  
at least one variable gain amplifier to amplify a transmit signal before it is delivered to said array of transmit antenna elements during a transmit operation, wherein said power control unit controls the gain of said at least one variable gain amplifier to adjust the transmit power level of said system.
16. (Original) A method for use in wirelessly transmitting a communication signal to a remote location, said method comprising:  
determining a direction of said remote location;  
generating a transmit antenna beam in the direction of said remote location using phased array principles;  
determining a parameter related to an antenna gain associated with said transmit antenna beam; and  
using said antenna gain related parameter to adjust a power level of a transmit signal to be transmitted to said remote location via said transmit antenna beam.

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17. (Original) The method claimed in claim 16, further comprising:  
determining an average transmit duty cycle associated with transmissions to said remote location; and  
using said average transmit duty cycle to adjust the power level of said transmit signal.

18. (Original) The method claimed in claim 16, wherein:  
using said antenna gain related parameter includes adjusting the power level of said transmit signal in a manner that complies with mandated transmit power limits.

19. (Original) The method claimed in claim 18, wherein:  
using said antenna gain related parameter includes adjusting the power level of said transmit signal to maximize said power level while not exceeding said mandated transmit power limits.

20. (Original) The method claimed in claim 16, wherein:  
determining a direction of said remote location includes receiving an RF signal from said remote location and analyzing said RF signal to determine the direction of said remote location.

21. (Original) The method claimed in claim 16, wherein:  
determining a direction, generating a transmit antenna beam, determining a parameter related to an antenna gain, and using said antenna gain related parameter are performed from a single indoor location.

22. (Original) A communication system for use in communicating with a remote communication entity, comprising:  
an array of antenna elements arranged in a predetermined configuration;  
an adjustable beamformer coupled to said array of antenna elements to generate a transmit beam in a predetermined direction in response to a control signal, said adjustable

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beamformer being capable of generating a beam in any of a plurality of different directions; and

    a power control unit to adjust a power level of a transmit signal to be transmitted by said array of antenna elements based on at least one parameter associated with said transmit beam generated by said adjustable beamformer.

23. (Original) The communication system claimed in claim 22, wherein:

    said at least one parameter associated with said transmit beam includes an antenna gain related parameter.

24. (Original) The communication system claimed in claim 22, further comprising:

    a duty cycle determination unit to determine an average transmit duty cycle of said system over a predetermined time period, wherein said power control unit adjusts the power level of the transmit signal to be transmitted by said array of antenna elements based on said average transmit duty cycle.

25. (Original) The communication system claimed in claim 22, wherein:

    said adjustable beamformer generates the transmit beam in the predetermined direction using conventional phased array techniques.

26. (Original) The communication system claimed in claim 22, wherein:

    said adjustable beamformer is part of an adaptive antenna arrangement.

27. (Original) The communication system claimed in claim 22, wherein:

    said power control unit adjusts the power level of the transmit signal so that a maximum allowed power level is not exceeded.

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28. (Previously Presented) A communication system for use in communicating with a remote communication entity, comprising:

an array of dipole antenna elements arranged in a predetermined configuration;  
an adjustable beamformer coupled to said array of dipole antenna elements to generate a transmit beam in a predetermined direction in response to a control signal, said adjustable beamformer being capable of generating a beam in any of a plurality of different directions; and

a power control unit to adjust a power level of a transmit signal to be transmitted by said array of dipole antenna elements based on at least one parameter associated with said transmit beam generated by said adjustable beamformer.

29. (Previously Presented) The communication system claimed in claim 28, wherein:  
said at least one parameter associated with said transmit beam includes an antenna gain related parameter.

30. (Previously Presented) The communication system claimed in claim 28, further comprising:

a duty cycle determination unit to determine an average transmit duty cycle of said system over a predetermined time period, wherein said power control unit adjusts the power level of the transmit signal to be transmitted by said array of dipole antenna elements based on said average transmit duty cycle.

31. (Previously Presented) The communication system claimed in claim 28, wherein:  
said adjustable beamformer generates the transmit beam in the predetermined direction using conventional phased array techniques.

32. (Previously Presented) The communication system claimed in claim 28, wherein:  
said adjustable beamformer is part of an adaptive antenna arrangement.

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33. (Previously Presented) The communication system claimed in claim 28, wherein:

    said power control unit adjusts the power level of the transmit signal so that a maximum allowed power level is not exceeded.

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**EVIDENCE APPENDIX**

None.

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**RELATED PROCEEDINGS APPENDIX**

None.